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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,821	10/27/2003	Augustine Kuo	1875.5310000	9667
26111 7590 09/10/2007 STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C. 1100 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			EXAMINER WILLIAMS, LAWRENCE B	
			ART UNIT 2611	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

### Application No.

10/692,821

### Applicant(s)

KUO ET AL.

### Examiner

Lawrence B. Williams

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8 and 10-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8 and 10-13 is/are rejected.
- 7) ☒ Claim(s) 8 and 13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. The drawings were received on 29 June 2007. These drawings are accepted by the examiner.

### *Claim Objections*

2. Claim 8 is objected to because of the following informalities: The examiner suggests under section ii), applicant replace "linedriver" with "linedriver coil".

Appropriate correction is required.

3. Claim 13 is objected to because of the following informalities: The examiner suggests applicant add a period after "HDSL signal" in line 2 of claim 13.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 3-6, 8, 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conroy et al. (US Patent 6,870,928 B1) in view of Christensen et al. (US Patent 6,278,695 B1).

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(1) With regard to claim 1, Conroy et al. discloses in Fig. 4, a circuit which decouples gains for a transmit signal and a receive signal of a broadband modem that is coupled to a telephone line and which isolates narrowband voice signals from broadband signals, comprising: a multi-port transformer (42) including i) a line coil (inductors on n side of transformer, T1) electrically coupled to the telephone line (46); ii) a linedriver coil (44) electrically coupled to a broadband modem transmit line (TX\_OUTP, TX\_OUTM) carrying the transmit signal of the broadband modem; iii) a receive coil (48) electrically coupled to a broadband modem receive line (RX\_INP, RX\_INM) carrying the receive signal of the broadband modem; iv) wherein said line coil, said linedriver coil and said receive coil are magnetically coupled to each other (inherent since Fig. 4 discloses the multiport transformer (T1) comprising all three coils.) the line coil (inductors n side of transformer, T1), linedriver coil (44) and receive coil (48); a bridge circuit (R14, R16, R24, R25) electrically coupled between said multi-port transformer(42) and the broadband modem receive line (RX\_INP, RX\_INM); and a pair of line matching resistors (parallel combination of R7, R8, parallel combination of R9, R12) electrically coupled between said multi-port transformer and the broadband modem transmit line, wherein each the line matching resistors match the telephone line resistance. Though Conroy et al. is silent on the subject that the parallel combinations of resistors match the telephone line resistance, such resistors for matching the impedance of the telephone line resistance are routine and would be inherent in line interface circuits as taught in both applicant's admitted prior art (Fig 3, pg. 7, paragraph [0027] and Conroy's prior art (Fig. 1). Conroy et al. has commented that not all routine features are shown or described (col. 3, lines 44-46).

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Conroy et al. does not teach; i) wherein said line coil includes a first line coil, a line capacitor and a second line coil; ii) wherein said linedriver coil includes a first linedriver coil, a linedriver capacitor and a second linedriver coil; iii) wherein said receive coil includes a first receive coil and a second receive coil, wherein a node between the first receive coil and the second receive coil is coupled to ground.

However, Christensen et al. discloses in Fig(s). 4-6, a multi-port lan switch in which he discloses wherein a line coil includes a first line coil, a line capacitor and a second line coil; ii) wherein a line driver coil includes a first linedriver coil, a linedriver capacitor and a second linedriver coil; iii) wherein a receive coil includes a first receive coil and a second receive coil, wherein a node between the first receive coil and the second receive coil is coupled to ground.

It would have been obvious to one skilled in the art at the time of the invention to incorporate the teachings of Christensen et al. to block DC and filter signals in the circuit.

(2) With regard to claim 3, Conroy et al. also discloses in Fig. 4, the circuit of claim 1, wherein said bridge circuit (R14, R16, R24, R25) is coupled to the broadband modem transmit line (coupled through R14, R24) and subtracts the transmit signal from the receive signal.

Conroy et al. discloses the bridge circuit as a hybrid circuit (3) in reference to Fig. 2 (col. 1, line 32, and discloses the hybrid subtraction (col. 8, lines 28-31). The subtraction being the transmit signal from the receive signal would be inherent/routine to one skilled in the art. Conroy et al. has commented that not all routine features are shown or described (col. 3, lines 44-46).

(3) With regard to claim 4, Conroy et al. also discloses the circuit of claim 1, wherein the broadband modem is an ADSL modem (col. 1, line 13).

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(4) With regard to claim 5, Conroy et al. discloses the invention applicable to any DSL systems, i.e., xDSL, which would inherently include a VDSL modem (col. 9, lines 4-9).

(5) With regard to claim 6, Conroy et al. discloses the invention applicable to any DSL systems, i.e., xDSL, which would inherently include a HDSL, modem (col. 9, lines 4-9).

(6) With regard to claim 8, Conroy et al. discloses in Fig. 4, a broadband modem (col. 1, line 13) for coupling a broadband signal to a telephone line, comprising: a transmit circuit (From AFE) that provides a modem transmit signal (TX\_OUTP, TX\_OUTM); a receive circuit (To AFE) that receives a modem receive signal (RX\_INP, RX\_INM); a hybrid circuit (R14, R16, R24, R25, multiport transformer (42) coupled to said transmit circuit and said receive circuit which decouples gains for the modem transmit signal and the modem receive signal and which isolates narrowband voice signals from broadband signals (Isolation would be an inherent feature since Conroy et al discloses an ADSL , xDSL system). Conroy et al. discloses a multiport transformer providing a step up ratio  $n$  for the transmit signal and a step-down ratio  $m$  for the receive signal for decoupling gains (col. 5, lines 19-22); wherein said hybrid circuit comprises a multi-port transformer (42) including, i) a line coil (inductors on  $n$  side of transformer, T1) electrically coupled to the telephone line (46); ii) a linedriver coil (44) electrically coupled to a broadband modem transmit line (TX\_OUTP, TX\_OUTM) carrying the transmit signal of the broadband modem; iii) a receive coil (48) electrically coupled to a broadband modem receive line (RX\_INP, RX\_INM) carrying the receive signal of the broadband modem; iv) wherein said line coil, said linedriver coil and said receive coil are magnetically coupled to each other (inherent since Fig. 4 discloses the multiport transformer (T1) comprising all three coils.) the line coil (inductors  $n$  side of transformer, T1), linedriver coil (44) and receive coil (48); a bridge

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circuit (R14, R16, R24, R25) electrically coupled between said multi-port transformer(42) and the broadband modem receive line (RX\_INP, RX\_INM); and a pair of line matching resistors (parallel combination of R7, R8, parallel combination of R9, R12) electrically coupled between said multi-port transformer and the broadband modem transmit line, wherein each the line matching resistors match the telephone line resistance. Though Conroy et al. is silent that the parallel combinations of resistors match the telephone line resistance, such resistors for matching the impedance of the telephone line resistance are routine and would be inherent in line interface circuits as taught in both applicant's admitted prior art (Fig 3, pg. 7, paragraph [0027] and Conroy's prior art (Fig. 1). Conroy et al. has commented that not all routine features are shown or described (col. 3, lines 44-46).

Conroy et al. does not teach; i) wherein said line coil includes a first line coil, a line capacitor and a second line coil; ii) wherein said linedriver coil includes a first linedriver coil, a linedriver capacitor and a second linedriver coil; iii) wherein said receive coil includes a first receive coil and a second receive coil, wherein a node between the first receive coil and the second receive coil is coupled to ground.

However, Christensen et al. discloses in Fig(s). 4-6, a multi-port lan switch in which he discloses wherein a line coil includes a first line coil, a line capacitor and a second line coil; ii) wherein a line driver coil includes a first linedriver coil, a linedriver capacitor and a second linedriver coil; iii) wherein a receive coil includes a first receive coil and a second receive coil, wherein a node between the first receive coil and the second receive coil is coupled to ground.

It would have been obvious to one skilled in the art at the time of the invention to incorporate the teachings of Christensen et al. to block DC and filter signals in the circuit.

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(7) With regard to claim 11, Conroy et al. also discloses wherein the broadband signal is an ADSL signal (col. 1, line 13).

(8) With regard to claim 12, Conroy et al. discloses the invention applicable to DSL systems, i.e., xDSL, which would inherently include a VDSL, signal (col. 9, lines 4-9).

(9) With regard to claim 13, Conroy et al. discloses the invention applicable to DSL systems, i.e., which would inherently include an HDSL signal (col. 9, lines 4-9).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Conroy et al. (US Patent 6,870,928 B1) in combination with Christensen et al. (US Patent 6,278,695 B1) as applied to claim 1 above, and further in view of Harrington et al. (US Patent 6,163,579).

With regard to claim 2, as noted above, the combination of Conroy et al. and Christensen et al. teach all limitations of claim 1 above. They do not however teach wherein a turns ratio of the linedriver coil to said line coil is 1:N and a turns ratio of said receive coil to said line coil is M:N.

However, Harrington et al. teaches a broadband modem transformer hybrid wherein he discloses in Fig. 7, a turns ratio of a linedriver coil to a line coil is 1:N and a turns ratio of a receive coil to said line coil is M:N. Harrington et al. discloses a turns ratio of the linedriver coil



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to the line coil as 1:N and a turns ratio of the receive coil to said line coil is M:1. Thus if  $N=1$ , the receive coil to line ratio is M:N.

Therefore, it would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Harrington et al. as a method of independently controlling the transmit and receive gains (col. 6, lines 31-36).

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Conroy et al. (US Patent 6,870,928 B1) in combination with Christensen et al. (6,278,695 B1) as applied to claim 8 above, and further in view of Harrington et al. (US Patent 6,163,579).

With regard to claim 10, as noted above, the combination of Conroy et al. and Christensen et al. teach all limitations of claim 8 above. Conroy et al. does not teach wherein a turns ratio of the linedriver coil to said line coil is 1:N and a turns ratio of said receive coil to said line coil is M:N.

However, Harrington et al. teaches a broadband modem transformer hybrid wherein he discloses in Fig. 7, a turns ratio of a linedriver coil to a line coil is 1:N and a turns ratio of a receive coil to said line coil is M:N. Harrington et al. discloses a turns ratio of the linedriver coil to the line coil as 1:N and a turns ratio of the receive coil to said line coil is M:1. Thus if  $N=1$ , the receive coil to line ratio is M:N.

Therefore, it would have been obvious to one skilled in the art at the time of invention to incorporate the teachings of Harrington et al. as a method of independently controlling the transmit and receive gains (col. 6, lines 31-36).

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*Conclusion*

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a.) Christensen et al. discloses in US Patent 5,680,397 Multi-Port Lan Switch For A Token Ring Network.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence B Williams whose telephone number is 571-272-3037. The examiner can normally be reached on Monday-Friday (8:00-6:00).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ghayour Mohammad can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lawrence B. Williams

  
lbw

September 2, 2007

  
**MOHAMMED GHAYOUR**  
**SUPERVISORY PATENT EXAMINER**